Cite

US-PAT-NO: 4335463

DOCUMENT-IDENTIFIER: US 4335463 A

TITLE: Simultaneous integral multi-access transmission system on transmission lines by optical fibres

---------- KWIC ---------

Detailed Description Text - DETX (45):
a programmable pseudo-random code generator 16, which supplies a series of ONES and of ZEROS whose distribution is almost random as a function of the time, i.e. the number of 1's is equal, to within a unit, to the number of 0's, as well as the 11's and 00's, 111's and 000's, etc. The sequence which serves to identify once and for all an emitter particular to the construction, is chosen as a function: of the number of messengers capable of simultaneously emitting on the line, the interferences and the desired synchronisation acquisition speed. It must be as long as possible in order to be approximate to the properties of the random generators, it must present a clear **correlation peak** (linear sequence), and intercorrelation levels with the other frequencies which are as low as possible (orthogonal sequences). In practice, this generator may be made by means of a shift register re-looped with the aid of one or more "exclusive OR" gates or by means of a read-only memory.

Current US Cross Reference Classification - CCXR (3):
398/154

Current US Cross Reference Classification - CCXR (4):

Cite 4,563,774

eiver for reversing the delay pattern introduced at the transmitter so that the autocorrelation peaks from the correlator means are in synchronism.

Claims Text - CLTX (6):

6. A digital communication system as defined in claim 4 including decision means (28) coupled to receive the sum of the autocorrelation peaks from the summing means, said decision means serving to establish a threshold which is exceeded by the summed autocorrelation peaks but not normally by background peaks.

Claims Text - CLTX (16):

each correlator means producing an autocorrelation peak when a received address encoded message bit matches the unique digital word address of the receiver,

1st Cite

US-PAT-NO: 5276636

DOCUMENT-IDENTIFIER: US 5276636 A

TITLE: Method and apparatus for adaptive real-time optical correlation using phase-only spatial light modulators and interferometric detection

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Brief Summary Text - BSTX (8):
Optical correlators perform the equivalent of the mathematical operation of correlation between two images (or signals) in an analog fashion, based on the physical properties of optical waves and the response of photosensitive (or photodetecting) materials to optical waves. The operation of coherent optical correlators ("optical correlator") is based on the interference of nearly monochromatic optical waves (primarily lasers). Any optical correlator takes two images as input, one considered the object to be identified (template, reference image) the other being the image to be inspected (scene image, test image). The image at the output of the correlator (correlation plane) represents the correlation integral of the two images. If two images are similar in shape, size and variation in intensity, the input is transformed into a narrow, large intensity peak in the correlation plane. The location of the peak is exactly proportional to the lateral offset between the correlated objects in the two images. Typically, a video camera views and records the correlation plane. A computer or electronic system can then simply and quickly examine the **correlation** plane image on a pixel-by-pixel basis

to determine if
the intensity exceeds a **threshold** for positive identification, and if so,
record the pixel location (locations) of the correlated object (objects).

Brief Summary Text - BSTX (33):

More specifically, the method of the present invention performs optical **correlation** by using lenses to Fourier transform live images of the test and reference images represented on spatial light modulators; by then interfering these light distributions representing the Fourier transforms with plane wave references that are phase-shifted from each other by known amounts; by then recording the interference patterns with a real-time image sensor, such as a video camera; by then **decoding** the phase of the test and reference spectra from the interferograms using electronic circuitry; by then subtracting the **decoded** phase of the test spectrum from the reference spectrum and identically modulating the phase of a phase-only spatial light modulator with the phase difference; by then using a lens to Fourier transform the phase only modulation; and, finally, by using a real-time image sensor to record (and additional auxiliary circuitry to evaluate) the intensity of the Fourier transform which represents the **correlation** plane.

Detailed Description Text - DETX (15):

The quarter wave plate Q has a mirror 8 of small area deposited on its front surface. The quarter wave plate Q and the polarized beam splitter PBS are used together to efficiently direct light from the laser illuminator to the video camera V1. The SLM P also performs the function of phase shifting. The optical system performs common path interferometry of the Fourier transform of

the transmittance of the phase-only SLM. The video scene g(x,y) and reference scene h(x,y) are now nonlinearly transformed by the phase-only SLM into the **optical signals** s(x,y)=exp[jg(x,y)] and r(x,y)=exp[jh(x,y)]. The phase shifting operation is performed by offsetting the phase of each SLM pixel by 0, .pi./2, and -.pi./2 in successive frames. This follows from the linearity of the Fourier transform, where, in this case, the Fourier transform is being linearly scaled by a complex and unit magnitude constant. The nonlinear transform of the scene by the SLM may reduce the performance of the correlator over using a magnitude-only SLM. Magnitude-only performance may be approximated by small phase modulation depth or by binary thresholding of the scene followed by mapping of pixels above **threshold** to 1 (0 radians) and below **threshold** to -1 (.pi. radians). The first mapping strategy leaves a large DC peak in the transform plane, while the second mapping is identical to a binary-weight magnitude-only SLM, except for a shift in the DC level. The performance of the interferometer will also be affected by the accuracy in identically off-setting the phase of each pixel of the SLM.

lished in the phase conjugate mirror 200 to the threshold device 25.

Detailed Description Text - DETX (9):

The threshold device 25 is a device having a differential characteristic and passes the input image only when the image has an intensity exceeding a predetermined threshold. Thus, the threshold device 25 detects whether the agreement between the coded input image and the associated image incident thereto in a form of coded image has exceeded a predetermined threshold level, and if yes, the received image is passed to a photodetector array 26 which has a similar construction as the photodetector array 16. This photodetector array 26 is followed by an electronic decoder 17 for decoding, and a laser diode array 28 which is similar to the laser diode array 18 is driven responsive to an output signal of the decoder 17. Thus, an image A' which is associated by the system on the basis of the input image A is obtained. Alternatively, one may supply the image directly from the photodetector array 26 to a subsequent processing part 29.

Detailed Description Text - DETX (10):

When, on the other hand, the degree of agreement has not exce

y thresholding of the scene followed by
mapping of pixels above threshold to 1 (0 radians) and below
threshold to -1
(.pi. radians). The first mapping strategy leaves a large
DC peak in the
transform plane, while the second mapping is identical to a
binary-weight
magnitude-onl

the
correlation plane. A computer or electronic system can then simply and quickly
examine the correlation plane image on a pixel-by-pixel basis to determine if
the intensity exceeds a threshold for positive identification, and if so,
record the pixel location (locations) of the correlated object (objects).

Brief Summary Text - BSTX (33)